

# RECLAMATION

*Managing Water in the West*

## Draft Environmental Assessment

### **Transfer of up to 20,500 acre-feet of Central Valley Project Water from Central California Irrigation District to San Luis, Panoche, Del Puerto and Westlands Water Districts and up to 5,000 acre-feet of Central Valley Project Water from Firebaugh Canal Water District to San Luis Water District or Westlands Water District**

EA-10-02



U.S. Department of the Interior  
Bureau of Reclamation  
Mid Pacific Region  
South Central California Area Office  
Fresno, California

February 2010

## **Mission Statements**

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Appendix A (bound separately)--CCID policy entitled “Rules Governing Pumping Private Wells for Credits in Other District

## List of Acronyms and Abbreviations

af	acre-feet (the volume of water one foot deep and an acre in area)
af/y	acre-feet per year
CCID	Central California Irrigation District
Contract Year	March 1, 2010 through February 28, 2011 or March 1, 2011 through February 28, 2012
CVP	Central Valley Project
CVPIA	Central Valley Improvement Act
CWA	Clean Water Act
DMC	Delta-Mendota Canal
DPWD	Del Puerto Water District
DWR	California Department of Water Resources
EA	Environmental Assessment
ESA	Endangered Species Act
FCWD	Firebaugh Canal Water District
FWCA	Fish & Wildlife Coordination Act
FWS	Fish and Wildlife Service
ITA	Indian Trust Assets
M&I	municipal and industrial
MBTA	Migratory Bird Treaty Act
Mendota WA	Mendota Wildlife Area
mg/L	milligrams per liter
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
PWD	Panoche Water District
Reclamation	Bureau of Reclamation
SIP	State Implementation Plan
SJR	San Joaquin River
SJV	San Joaquin Valley
SLC	San Luis Canal
SLCC	San Luis Canal Company
SLR	San Luis Reservoir
SLWD	San Luis Water District
SOD	South of the Delta
SWP	California State Water Project
TDS	Total dissolved solids
Transfer Recipient Districts	SLWD, PWD, DPWD, and WWD

EPA  
WWD

Environmental Protection Agency  
Westlands Water District

# **Section 1 Purpose and Need for Action**

## **1.1 Background**

The State of California is currently experiencing water management challenges during a third year of drought. The Bureau of Reclamation issued an anticipated irrigation water allocation of 5% on February 26, 2010.

As a further result of the continuing dry conditions, Central Valley Project (CVP) reservoir storage is a critical water management concern for the 2010 summer demand season. For SOD contractors, Reclamation relies heavily on water in the San Luis Reservoir (SLR) storage to supply water contractors during the summer. Based on Reclamation's forecast of CVP operations, the amount of water able to be pumped and the amount of water existing in SLR represents a limitation to available water supplies for delivery in the months of June through September 2010.

Reclamation reviews and approves water transfers to ensure that the water transfer meets applicable Federal and State laws, including policies and procedures governing transfer of CVP surface supplies and, in particular, the Central Valley Project Improvement Act of 1992, Section 3405 (CVPIA).

## **1.2 Purpose and Need**

California has experienced a severe drought in recent years that has reduced water supplies to many Central Valley Project (CVP) contractors. South-of-Delta (SOD) CVP water service contractors experienced reduced water supply allocations in 2007, 2008, and 2009 due to hydrologic conditions and regulatory requirements. The hydrologic conditions for 2010 are still evolving, and although conditions have improved somewhat since the beginning of the water year, it is likely that SOD CVP contractors will still need to supplement supplies to meet demands because of past dry years, relatively low reservoir storage levels, and overall CVP operational constraints. SOD CVP contractors thus need to identify additional supplies to avoid shortages for their customers.

These proposed transfers are intended to allow water delivery in an expeditious manner so as to assist in offsetting the effects of reduced 2010 and likely reduced 2011 CVP deliveries by increasing the volume of water available to the Transfer Recipient Districts.

The Central California Irrigation District would be delivering the water from its transfer to landowners that own property both in CCID and the Transfer Recipient Districts; therefore supplying water to their own multi-water district landowners. This CVP water is needed immediately by the Transfer Recipient Districts to meet in-district irrigation demands. Similarly, the FCWD would be delivering the water from their transfer to landowners that own property both in FCWD and SLWD and/or WWD therefore supplying water to their own multi-water district landowners. This CVP water is needed immediately by SLWD and/or

WWD to meet in-district irrigation demands. San Luis Water District, DPWD, PWD and WWD, collectively referred to as the Transfer Recipient Districts.

### **1.3 Scope**

The areas in which impacts may occur are the CVP service area boundaries of CCID, FCWD, and the Transfer Recipient Districts. The water would be leaving FCWD and be applied in either SLWD, WWD or both, and would leave CCID and be applied in the Transfer Recipient Districts. See Figures 1 and 2 for maps of the action area. Additionally the EA includes potential impacts to the Delta-Mendota Canal (DMC), Mendota Pool and the San Luis Canal (SLC) as the facilities used to facilitate the transfer.

The potential transfers would occur from April 2010 through December 2010 and April 2011 through December 2011 and therefore this will be the study period for evaluating any direct, indirect and cumulative effects.

Potentially affected resources in the project vicinity include:

- Surface Water Resources
- Groundwater Resources
- Land Use
- Biological Resources
- Air Quality/Global Climate Change
- Cultural Resources
- Indian Trust Assets
- Socioeconomic Resources
- Environmental Justice
- Cumulative Impacts

### **1.4 Authorities for the Proposed Action**

The transfers analyzed in this Environmental Assessment (EA) are subject to the following contracting authorities and guidelines as amended and updated and/or superseded:

- Title XXXIV Central Valley Project Improvement Act, October 30, 1992, Section 3405 (a)
- Reclamation Reform Act, October 12, 1982
- Reclamation's Interim Guidelines for Implementation of Water Transfers under Title XXXIV of Public Law 102-575 (Water Transfer), February 25, 1993
- Reclamation and United States Fish and Wildlife Service (FWS) Regional, Final Administrative Proposal on Water Transfers April 16, 1998
- Reclamation's Mid-Pacific Regional Director's Letter entitled "*Delegation of Regional Functional Responsibilities to the Central Valley Project (CVP) Area Offices - Water Transfers*", March 17, 2009



## 1.5 Other Related Environmental Analyses

- *EIS/EIR Water Transfer Program for the San Joaquin River Exchange Contractors Water Authority 2005–2014, dated December 2004.* In December 2004, Reclamation and the Exchange Contractors completed a Final Environmental Impact Statement/Environmental Impact Report (Final EIS/EIR) on a water transfer program for up to 130,000 acre-feet (af) for water service years 2005-2014 involving the entire Exchange Contractors' service area (240,000 acres). This water transfer program developed the water primarily from conservation measures and tailwater recovery, but also from groundwater pumping and temporary land fallowing. It made the water available for transfer to other CVP contractors, the San Joaquin Valley (SJV) wildlife refuges, and the Environmental Water Account. (Reclamation 2004)
- *Groundwater Pumping/Water Transfer Project for 25 Consecutive Years Environmental Assessment/Initial Study SCH# 2007072012, dated November 30, 2007.* Under this project, the primary method for developing the water is localized groundwater pumping and the primary purpose was to alleviate drainage impacts in Central California Irrigation District (CCID) and FCWD. Furthermore, an additional purpose for the project is to develop a water supply for transfer that would provide funding for managing shallow groundwater levels within a portion of the Exchange Contractors' service area and implementation of capital improvements. Only drainage-impaired areas of approximately 28,000 acres within the two districts would be involved in water development. The application of the pumped groundwater to FCWD agricultural lands frees up commensurate surface water supplies for use by other CVP contractors as a transfer. None of the transfer water is proposed for other Federal uses such as the San Joaquin Valley wildlife refuges or the Environmental Water Account considered in the 2005-2014 transfer program. The transfer water for this program would be used by San Luis Unit (West San Joaquin Division) contractors and Santa Clara Valley Water District (San Felipe Division). FCWD's participation is up to 10,000 af, on an annual basis (Reclamation 2007a).
- *Transfer of up to 4,400 Acre-feet of Central Valley Project Water from Firebaugh Canal Water District to San Luis Water District or Westlands Water District Environmental Assessment, dated April 21, 2009.* This action was identical to the corresponding proposed action analyzed in this document, except that the amount of water was 600 acre-feet less, the action took place only from April through September 2009, and a fifth well that would pump into Mendota Pool was not included.
- *Central California Irrigation District Transfer of up to 15,000 Acre Feet to San Luis, Panoche, Del Puerto and Westlands Water Districts Environmental Assessment, dated May 5, 2009.* The action was identical to the corresponding proposed action analyzed in this document, except that the amount of water was less, and the action took place only from March 2009 through December 2009.
- *Amendment to Approve an Additional 5,500 Acre-Feet to Central California Irrigation District's Transfer of up to 15,000 Acre-Feet to San Luis, Panoche, Del Puerto, and Westlands Water Districts Supplemental Environmental Assessment,*

*dated July 23, 2009.* This action increased the amount of water involved with the above-listed project, but didn't change the time frame; therefore, this action in conjunction with that analyzed in original EA differs from the currently proposed project only in the time period covered.

## **Section 2 Alternatives Including the Proposed Action**

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions over the next two years without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

### **2.1 No Action Alternative**

Under the No Action Alternative, Reclamation would not approve the transfer of up to 20,500 acre-feet (af) from CCID to the Transfer Recipient Districts from April 2010 through December 2010 and April 2011 through December 2011, and would not approve the transfer of up to 5,000 af from FCWD to SLWD and WWD from April 2010 through December 2010 and April 2011 through December 2011. Reclamation would continue to deliver CVP water to CCID, which would be delivered by the district to individual landowners within CCID's boundaries.

### **2.2 Proposed Action**

Reclamation proposes to approve the transfer of up to 20,500 af of groundwater pumped from within CCID to the Transfer Recipient Districts in the months of April 1, 2010 through December 31, 2010 and April 1, 2011 through December 31, 2011. Under the Proposed Action individuals who own land in both CCID and a Transfer Recipient District would pump groundwater into CCID's internal in-district, at up to 75 cubic-feet per second (cfs), up to a total of 150 af/day. The groundwater pumping would be conducted under the CCID policy entitled "Rules Governing Pumping of Private Wells for Credits in Other Districts" (See Appendix A). Reclamation would then deliver an identical amount of CVP water, that would otherwise be delivered to CCID under the San Joaquin Exchange Contractor's Contract (Exchange Contract), to the Transfer Recipient District for delivery to that specific landowner.

Central California Irrigation District requires that the groundwater meet the following standards for pumping into their conveyance system:

- 1,500 TDS
- 2 ppb boron
- Non-detect for selenium
- Downstream blended quality not to exceed 700 EC

Highlights of CCID's policy entitled "Rules Governing Pumping of Private Wells for Credits in Other Districts" include the following:

- Water credits may be used in the Transfer Recipient District only by the landowner who owns the ground where the well is located in CCID. Permission to pump a well for credit would be granted to only one owner during the year; permission cannot be transferred to another owner. The landowner must own both the land to which the well is credited as used in CCID and the land in the Transfer Recipient Districts.
- A well pumper would be allowed to pump no more than an amount of groundwater which can be pumped without damaging other landowners or depleting groundwater storage. This amount is currently estimated at 3.0 af/acre. Acreage for this calculation will include land owned contiguous to the parcel where the well is located, or within five miles of the well.
- Pumping for credit must be terminated if the pumping has a detrimental impact on neighboring wells or on the groundwater table. (This is determined by customer complaints and a comprehensive groundwater monitoring plan.)
- Pumping into CCID canals will be allowed only when the pumped water is needed for District demands.
- A ten percent loss factor will be applied to all well water pumped for credit under this policy.
- In order to avoid unreasonable impacts on water supply, operations, and financial condition of the CCID and its water users, the CCID will not approve a proposal to pump well water for credit unless:
  - The Transfer Recipient District conducts a water conservation program that includes efficient water management practices.
  - The Transfer Recipient District conducts a drainage program which assures that the water transfer will not cause a deleterious effect on lands downslope from any lands irrigated as a result of the transfer
  - The transferee demonstrates that it will not be dependent upon the transferred water supply at the end of the term of the proposed transfer.
  - A proposal to pump wells for credit will be approved no more than two out of three consecutive years.

Permission to pump for credit may be revoked by CCID if any of the above terms and conditions are violated.

Landowners in CCID would pump from up to 23 wells interspersed throughout CCID with a total capacity of 75 cfs. It is unlikely that all 23 wells would be pumping simultaneously. The demands on the system vary greatly depending on the location in the system.

Reclamation also proposes to approve the transfer of up to 5,000 af of FCWD's Exchange Contract CVP supplies to WWD and/or SLWD from April 1, 2010 through December 31, 2010 and April 1, 2011 through December 31, 2011.

Firebaugh Canal Water District would pump up to 15 cfs/day (up to 30 af/day) of groundwater from 5 specific wells (see Figure 3 for well locations) into FCWD's facilities for delivery to landowners within the district boundaries. Well #'s 1-4 would discharge directly into FCWD's Intake Canal; well #5 would discharge water into Mendota Pool, and from there it would be delivered into the Intake Canal. A like amount of CVP water delivered to Mendota Pool by Reclamation for use by FCWD would be used by Reclamation to meet other obligations from the Mendota Pool. Reclamation would deliver a like amount of water from the DMC and/or San Luis Canal to San Luis Water District and Westlands Water District, for delivery to individual landowners within those districts' boundaries. The FCWD is delivering the water from this transfer to landowners that own property both in FCWD and SLWD and/or WWD; therefore supplying water to their own multi-water district landowners.

Firebaugh Canal Water District has adopted water transfer policies. These policies were adopted on March 11, 1993 and state the conditions that water transfers out of FCWD must adhere to FCWD's policy as summarized below.

- Firebaugh Canal Water District Directors must approve of all water transfers
- No transfer of more than 20 percent of FCWD's water supply subject to contract with Reclamation shall be approved without FCWD approval or conditioned approval.
- No water transfer will be approved if a substitution of groundwater is likely to result in significant long-term adverse impacts on groundwater conditions within FCWD's service area, or in unreasonable interference with pumping rates or capacities of wells within the FCWD's service area.
- No water transfer would be approved that involves groundwater pumping in critical water years.
- Before FCWD approval, the transferee must conduct a water conservation program in compliance with the urban water management plan and Water Code Sections 10610, et seq., and 10656 or an agricultural management plan adopted pursuant to Water Code Sections 10800 et seq., and a drainage program must be approved which will not cause a deleterious effect on lands downslope of any irrigated lands impacted by the transfer.
- Public hearings may be held to determine compliance with the California Environmental Quality Act, impacts of the proposed transfer on water supply, operations, and financial conditions of FCWD and its water users (Reclamation 2004).

Reclamation has placed further restrictions on the CVP water associated with this action.

- No native or untilled land (fallow for three consecutive years or more) may be cultivated with CVP water involved in these actions.
- No new construction or modification of existing facilities is to occur in order to complete the Proposed Action.

- Transfers and exchanges involving CVP water cannot alter the flow regime of natural waterways or natural watercourses such as rivers, streams, creeks, ponds, pools, wetlands, etc., so as to have a detrimental effect on fish or wildlife or their habitats.
- All transfers and exchanges involving CVP water must comply with all applicable Federal, State and local laws, regulations, permits, guidelines and policies.

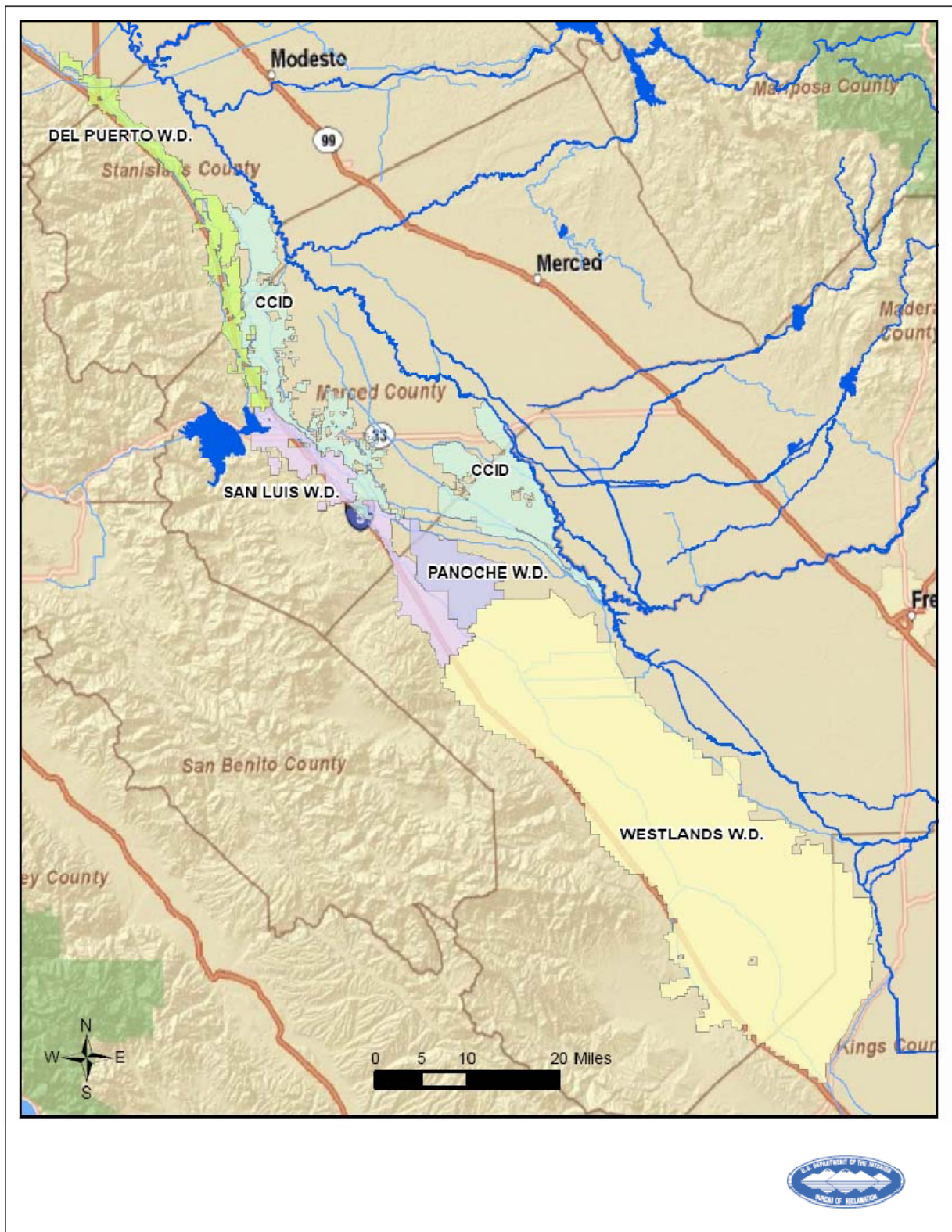


Figure 1 Project Area for CCID transfers

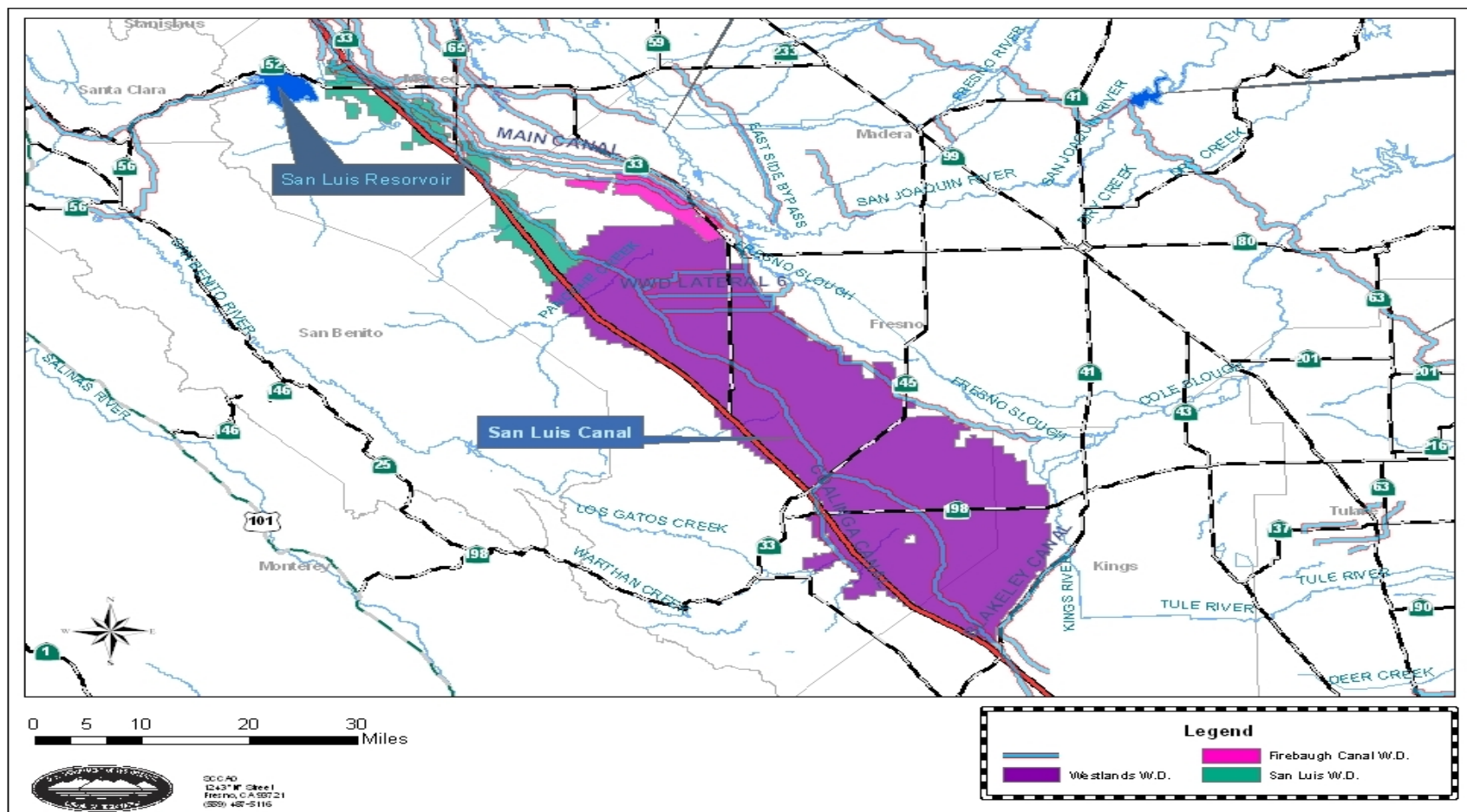






Figure 3 Location of FCWD wells which would pump up to 15 cfs/day



## Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

### 3.1 Water Resources

#### 3.1.1 Affected Environment

##### 3.1.1.1 Surface Water

The ten-year average allocation of SOD CVP water supplies delivered to the water contractors is described in Table 1. It lists maximum deliveries of CVP water on a yearly basis for agriculture purposes from 1999 through 2009. The ten-year average is 67 percent of contract total for agriculture.

The annual contract entitlement for SLWD is 125,080 af, and the average CVP supply (125,080 af x 0.57) is 71,296 af. With a 2010 allocation of five percent SLWD is 67,731 af below the typical supply levels. The annual contract entitlement for WWD is 1,150,000 af, and the average CVP supply is 770,500 af. With a 2010 allocation of five percent WWD is 731,975af below the typical supply levels. The annual contract entitlement for PWD is 94,000 af, and the average CVP supply is 62,980 af. With a 2010 allocation of five percent PWD is 59,831 af below the typical supply levels. The annual contract entitlement for DPWD is 86,128 af, and the average CVP supply is 57,706 af. With a 2010 allocation of five percent DPWD is 54,821 af below the typical supply levels.

**Table 1 Average SOD agricultural allocation (as percentage of contract total)**

Year	Allocation
<b>10-11</b>	<b>5</b>
<b>09-10</b>	<b>10</b>
08 – 09	40
07 – 08	50
06 – 07	100
05 – 06	85
04 – 05	70
03 – 04	75
02 – 03	70
01 – 02	49
00 – 01	65
99 – 00	70
<b>Average</b>	<b>67%</b>

Refined allocation determinations will be made throughout the contract year to align the allocation with the hydrologic conditions and pumping capabilities and therefore the 2010 allocation may increase if there are additional rain and snow events. San Luis Water District, PWD, DPWD, and WWD are likely to be in a water deficit even if there is an increased allocation.

**San Joaquin River Exchange Contractors** The Exchange Contractors, which include CCID, FCWD, San Luis Canal Company and Columbia Canal Company, hold historic water rights to water in the San Joaquin River (SJR). Their service area is located on the west side of the San Joaquin Valley. In exchange for the CVP's regulation and diversion of the SJR at Millerton Lake (Friant Division), Reclamation agreed to supply water to the Exchange Contractors from the CVP's Delta supply.

Reclamation and the Exchange Contractors are parties to the Second Amendatory Contract for Exchange of Waters, Contract No. I1r-1144 (Contract), dated February 14, 1968, and incorporated by reference into this EA. Under the Contract, the United States supplies the Exchange Contractors with a substitute supply of CVP water to be used in lieu of their rights to certain waters of the SJR. Pursuant to the terms of the Contract, up to 840,000 af of substitute CVP water per year is made available for irrigation purposes by Reclamation from the Sacramento River and the Delta, and other sources through the CVP, and up to 650,000 af in critical dry years. The Exchange Contractors' operations consist of the diversion of substitute water from the Delta-Mendota Canal (DMC), the Mendota Pool, and possibly the SJR and north fork of the Kings River.

*Central California Irrigation District* Central California Irrigation District receives its surface water supplies from Reclamation pursuant to the Exchange Contract (CVP supply). Central California Irrigation District's annual CVP water supply is 532,000 af in a non-critical year. The terms of the Exchange Contract limit the quantity of surface water delivery in accordance with a five-month and seven-month schedule, and further limit the monthly quantity of water delivered. As a result of these constraints, CCID has historically relied on groundwater to supplement surface water especially during peak summer water demand months.

Central California Irrigation District is a signatory to the broadly accepted AB 3616 Best Management Practices Memorandum of Understanding. The district adopted an AB 3030 Groundwater Management Plan and actively manages its surface and groundwater through tiered water price incentives and disincentives. (CCID Rules 2007) Central California Irrigation District's AB3030 plan includes annual water level, pumping, and groundwater quality monitoring. Programs involving groundwater pumping are only approved by CCID after evaluation of any impacts of the prior year's monitoring data. Table 2 shows historical pumping under prior year's programs similar to the 2010/2011 proposal in relation to the Federal allocation. In years when the SOD contractors had a 100 percent allocation there was no transfer program as described in this EA however the table also shows that the lower the CVP allocation, the more water is transferred. It also shows the projected 2010 quantity. The table gives an idea of the relationship between the Federal allocation and amounts of water pumped; for instance, in two years when the Federal allocation was 100 percent, no water was pumped.

**Table 2 Historical pumping in relation to the Federal allocation (in acre-feet)**

Year	Federal Allocation	Quantity Approved	Quantity Actually Credited
2010	5	20500	Data currently unavailable

2009	10	21000	10841.61
2008	40	8900	6778
2007	50	14000	5200
2006	100	0	0
2005	100	0	0
2004	70	7629	3621
2003	75	5143	1760
2002	70	5700	4000
<b>2002-2008 Average</b>		5910.286	3051.286

← Estimated based on past performance.

The district historically utilizes all of its annual contract supply. In a critical water year, which is based on the Shasta Lake Inflow Index criteria, the district realizes a 23 percent reduction in its annual water supply. The year 2009 was originally designated a critical year; however, recent storms have brought the Shasta Index out of the critical range and therefore CCID's water supplied by the CVP via the delta will be 532,000 af. Central California Irrigation District also typically pumps approximately 48,801 af annually and utilizes 45,646 af of reclaimed water from drainage reuse (CCID Water Conservation Plan 2005). Central California Irrigation District has one M&I customer, the City of Dos Palos which typically receives approximately 1,450 af annually. See Table 3 for information on deep well pumping in and around CCID.

**Table 3 Deep well pumping within CCID**

CENTRAL CALIFORNIA IRRIGATION DISTRICT							
ANNUAL DEEP WELL STUDY SUMMARY FOR 2006							
DEEP WELL PUMPAGE INSIDE AND OUTSIDE OF THE CCID IN ACRE FEET							
YEAR OF PUMPING	CCID'S DEEP WELLS (A)	PRIVATE WELLS INSIDE CCID (B)	ALL WELLS INSIDE CCID (A + B)	WELLS OUTSIDE OF CCID (C)	TOTAL OF ALL WELLS INSIDE & OUTSIDE OF CCID (A + B + C)	D.M.C. PUMPERS (M/F YEAR) (INCLUDED IN COLUMN (C))	MENDOTA POOL PUMPERS (NOT INCLUDED IN [A,B or C])
1989	23,645	NA	NA	NA	NA	NA	11,193
1990	46,591	NA	NA	NA	NA	3,915	17,810
1991	53,480	87,159	140,639	84,859	225,498	28,662	51,080
1992	54,784	95,732	150,516	117,295	267,811	37,279	54,606
1993	19,567	90,920	110,487	131,567	242,054	26,878	19,634
1994	38,804	148,046	186,850	203,894	390,744	42,800	41,439
1995	2,775	72,116	74,891	121,276	196,167	1,275	0
1996	27,170	74,199	101,369	116,129	217,498	4,766	2,572
1997	34,936	65,211	100,147	135,974	236,121	26,852	20,431
1998	372	23,566	23,938	56,467	80,405	12,722	2,024
1999	31,003	39,000	70,003	74,311	144,314	6,457	24,599
2000	43,212	40,701	83,913	107,248	191,161	9,531	27,822
2001	48,493	48,898	97,391	96,366	193,757	4,642	40,130
2002	52,443	24,020	76,463	57,286	133,749	3,813	24,135
2003	48,801	44,296	93,097	94,708	187,805	5,128	15,829
2004	59,616	48,650	108,266	90,101	198,367	3,255	15,605
2005	26,636	27,358	53,994	65,239	119,233	1,394	10,092
2006	1,955	35,328	37,283	91,636	128,919	2,000	3,043
1991-2006 AVERAGE	34,003	60,325	94,328	102,772	197,100	13,183	22,549

DATA —Denotes data was revised for that year

Central California Irrigation District's water quality is reflected by water quality analysis in CCID's Main Canal (see tables 4 and 5 below).

**Table 4 CCID Main Canal (2000 – 2004) five year monthly means (EC and TDS).**

<b>Date</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
<b>Avg. EC</b>	672	615	550	502	502	428	345	417	513	566	579	656
<b>Avg. TDS</b>	431	396	356	357	326	281	229	274	333	366	374	421

**Table 5 CCID Main Canal (2000 – 2004) water quality data by year (EC and TDS).**

<b>Annual Water Quality Data</b>						<b>Five year means</b>
<b>Year</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2000-2004</b>
<b>Avg EC</b>	<b>443</b>	<b>604</b>	<b>566</b>	<b>477</b>	<b>491</b>	<b>521</b>
<b>Avg. TDS</b>	<b>290</b>	<b>389</b>	<b>366</b>	<b>311</b>	<b>319</b>	<b>338</b>

Monthly: Values originate from a continuous EC recorder.

Annual: Values originate from the mean of each daily value recorded for that year.

Five Year: Values originate from the mean of each daily value recorded for the five year period.

EC: (Electrical Conductivity) measured in Microsiemens (Micromhos per cm)

TDS: (Total Dissolved Solids) measured in PPM (parts per million)

EC to TDS: Conversion factor of 0.618+16

*Firebaugh Canal Water District* Firebaugh Canal Water District's annual water supply is 85,000 af in a non-critical year. The district historically utilizes all of its annual contract supply. In a critical water year, which is based on the Shasta Lake Inflow Index criteria, the district realizes a 38 percent reduction in its annual water supply. 2009 was originally designated a critical year however subsequent storms brought the Shasta Index out of the critical range and therefore FCWD's water supplied by the CVP via the delta was 85,000 af.

*San Luis Water District* On February 25, 1959, SLWD entered into a long-term water service contract with Reclamation and a subsequent amendatory contract on June 18, 1974, which has an annual allocation of CVP water of up to 125,080 af/year (af/y). Recently, due to the expiration of the original long-term contract, SLWD signed an interim contract. This contract was effective January 1, 2009 with a term of up to 26 months.

SLWD's water needs are 120,000 af/y. SLWD does not currently maintain detailed records regarding irrigation methods, however, because of the area's hilly terrain and rolling topography, sprinkler irrigation continues to be used quite extensively. It is estimated that sprinklers may be used on approximately 60 percent of the irrigated acreage. During the past ten years, a shift to both drip and micro irrigation systems has paralleled the conversion from row crops to permanent crops (i.e., orchards and vineyards). Drip or micro irrigation systems are currently used on approximately 23 percent of the irrigated acreage. Use of these systems is expected to increase proportionally to the shift to permanent crops.

*Westlands Water District* On June 5, 1963, WWD entered into a long-term contract (Contract 14-06-200-495-A) with Reclamation for 1,008,000 af of CVP supply from the SLC,

Coalinga Canal, and Mendota Pool. The first deliveries of CVP water from the SLC to WWD began in 1968. In a stipulated agreement dated September 14, 1981, the contractual entitlement to CVP water was increased to 1.15 million af. The long-term contracts for WWD expired on December 31, 2009, however interim contracts have been executed for interim contract renewal for the San Luis Unit contractors (Reclamation 2007b and Reclamation 2010). Westlands Water District currently has a 613,100 acre boundary.

Westlands Water District's annual contract amount is subject to shortages caused by drought, legislative, environmental, and regulatory constraints. In 1999, Reclamation stated that the estimated average long-term supply for WWD was 70 percent of its water supply contract, or about 805,000 af/y (approximately 70 percent of the contract total). Prior to 1990, its average CVP water supply, including interim CVP water when it was available, was approximately 1,250,000 af/y. Current average long-term CVP water supply deliveries of 827,743 af/y to WWD are still below the average deliveries prior to 1990 (Reclamation 2007b).

*Panoche Water District* Panoche Water District began receiving its first CVP supply water from the Friant Dam of the San Joaquin River in 1947 under an interim contract. On August 16, 1955, PWD entered into a long-term water service contract with Reclamation. This contract provided for the delivery to the PWD of 93,988 af/y from the DMC. This equates to 2.46 af/acre of imported water through the CVP. Panoche Water District's annual agricultural demands are 106,772 af. The contract service area is approximately 38,000 acres.

When the PWD's contract with Reclamation became effective, most farming operations came to rely on better quality surface water rather than groundwater. Originally the CVP surface water supply was intended to supplement the groundwater that had been used. However, with the exception of drought conditions, almost no groundwater has been utilized in the PWD since surface water became available. Panoche Water District supplies about 50 af of water per year for M&I purposes. Panoche Water District does not have any industrial use customers. There is some domestic use which is incidental to agriculture.

Panoche Water District obtains CVP water from both the DMC and SLC, through two diversion points on the DMC and six diversion points on the SLC. Modifications to the conveyance system made in 1989 allowed a larger portion of water delivery to be made by gravity from the SLC, in lieu of pumped delivery from the DMC. Water obtained from the SLC is cheaper than water obtained from the DMC because there are no pumping charges. The turnouts range in size from 42 to 250 cubic feet per second.

Approximately 20,000 acres within PWD are irrigated through the use of sprinklers in conjunction with graded/siphon tube irrigation. Approximately 8,000 additional acres are irrigated exclusively by the graded/siphon tube method. Subsurface trickle irrigation and graded/gated pipe irrigation are also used. Additionally, sprinkler systems are used on a small percentage of the irrigated lands.

*Del Puerto Water District* Del Puerto Water District is a California special district formed under the provisions of Division 13 of the Water code of the State of California. Del Puerto Water District is under contract with the Bureau of Reclamation for its water supply, which is delivered from the DMC. Del Puerto Water District provides irrigation water to over

45,000 acres of high-value permanent crops in the San Joaquin, Stanislaus and Merced Counties. The current annual irrigation demand is approximately 100,000 af, of which DPWD currently provides approximately 90,000 to 100,000 af of imported water. Any shortfall is provided by groundwater pumped by water users and/or water purchases.

Del Puerto Water District is located along the DMC corridor in southern San Joaquin County, western Stanislaus County and northwestern Merced County. The district is approximately 54,671 acres in size and is primarily an agricultural district. Currently, the only CVP supply used for M&I use is the one af of water supplied to the city landfill each month for dust suppression. All remaining CVP supplies are used for agriculture.

Of the irrigated lands, it is estimated that almost 40 percent of the cropped land in DPWD is irrigated by the sprinkler method, 12 percent is irrigated using the dip or micro-sprinkler irrigation method, and 48 percent is irrigated by the furrow/gated pipe method. This high percentage of low volume irrigation practices results in very high irrigation efficiency (estimated at 80 to 85 percent). Del Puerto Water District currently provides approximately 80,000 af/y (an average of 2.1 af per acre) of imported water and overlying water users pump approximately 5,000 af per (0.13 af per acre) from the groundwater basin. While historically, DPWD's contractual supplies have been reliable, since 1990 DPWD, like other SOD CVP contractors, has been subjected to ongoing shortages due to drought and legislative and regulatory requirements. This lack of reliability has resulted in improved irrigation efficiency, changed cropping patterns and, at times, the fallowing of open ground. The uncertainty of supplies from one year to the next has made it imperative that all available and conserved supplies be protected for use during times of shortage.

**Mendota Pool** Mendota Pool is a re-regulating reservoir for more than one million af of CVP water pumped from the Delta and delivered by the DMC. The Mendota Pool is impounded by Mendota Dam, which is owned and operated by CCID. Currently, Mendota Pool is sustained by the inflow from the DMC, which typically conveys 2,500 to 3,000 cfs to the Mendota Pool during the irrigation season. SJR water is only conveyed to the Mendota Pool during periods of flood flow. Mendota Pool extends over five miles up the SJR Channel and over 10 miles into Fresno Slough and varies from less than one hundred to several hundred feet wide. Water depth varies but averages about four feet. Mendota Pool contains approximately 8,000 af of water and has a surface area of approximately 2,000 acres when full. It is the largest body of ponded water in the San Joaquin Valley basin floor.

The Mendota Pool is located at the confluence of the SJR and Fresno Slough. The Mendota Pool receives water from the SJR, the Delta via the DMC, groundwater pumping from the Mendota Pool Pumpers, and intermittently from the Kings River drainage in the south via the James Bypass into Fresno Slough. Water from the Mendota Pool is diverted for a variety of agricultural, municipal, and habitat management uses. Mendota Wildlife Area (Mendota WA) receives water from the Mendota Pool via Fresno Slough, which is managed by CCID as a water conveyance facility. Gates and pumps divert water from Fresno Slough to Mendota WA. In addition to Mendota WA, several CVP Settlement Contractors and Exchange Contractors rely on Mendota Pool for water deliveries.

Water quality conditions in the Mendota Pool depend on inflows from the DMC, groundwater pumped into Mendota Pool by the Mendota Pool Group and, to a limited extent and mainly in wet years, SJR inflows. Water quality in the SJR varies considerably along the river's length. Above Millerton Lake and downstream towards Mendota Pool, flows are infrequent, but the quality of water released from Friant Dam is generally excellent. The reach from Gravelly Ford to Mendota Pool (about 17 miles) is perennially dry except during flood control releases from Friant Dam. During the irrigation season, most of the water released from the Mendota Pool to the SJR and to irrigators is imported from the Delta via the DMC. This water has higher concentrations of Total Dissolved Solids than water in the upper reaches of the SJR, and can be affected by runoff and seepage into the canal.

Panoche Creek, an ephemeral stream, also flows into Mendota Pool and, during high flows in the winter and spring, high concentrations of selenium have been brought into Mendota Pool via Panoche Creek flows (North State Resources 1999).

An additional source of water in Mendota Pool is from adjacent land owners pumping well water into Mendota Pool and taking delivery of it in a more convenient location, at convenient timing (but within 60 days of pumping in) and at differing water quality. In 2007, these adjacent landowners pumped 7,423 af into Mendota Pool. In 2008, 23,046 af were pumped, and in 2009, the amount was 24,239 af.

#### **3.1.1.2 Groundwater**

According to the California Department of Water Resources (DWR) Bulletin 118 (DWR 2003), groundwater provides approximately 30 percent of the total supply for the San Joaquin River Hydrologic Region. However, the amount of groundwater use within the region varies widely, both between different areas and from one year to the next. In WWD for example, groundwater has accounted for between 5 and 60 percent of total supply over the last 15 years, while in the Exchange Contractors' service area groundwater supplies have accounted for between 10 and 40 percent of the total over the last 10 years.

Much of the SJV aquifer system is in overdraft conditions, although the extent of overdraft varies widely from region to region. In the San Joaquin Basin, overdraft conditions were estimated at approximately 224,000 af, with groundwater pumping estimated at 3,520,000 af under 1990 conditions. The Tulare Basin region has experienced a greater degree of overdraft, estimated at 630,000 af, with groundwater pumping estimated at 5,190,000 af for 1990 conditions. Groundwater pumping in the SJV varies seasonally. Most groundwater is withdrawn during the spring-summer growing season, although pumping in some areas may occur throughout the entire year. Currently, the Exchange Contractors are not in an overdraft condition with the exception of the lands that lie in Madera County. No groundwater pumping for transfer would occur within Madera County.

The western SJV region has drainage problems caused by shallow clay layers of low permeability that limit recharge to groundwater. In addition, elevated concentrations of salinity, selenium, and boron exist in the semi-perched aquifer zone due to leaching from naturally occurring saline deposits from the Coast Range and have resulted in the accumulation of salts in the root zones of irrigated cropland. The San Joaquin Valley Drainage Program, established in 1984, published its recommendations for managing the drainage problem in 1990 (SJVDP 1990), culminating in a Memorandum of Understanding

(MOU) in 1991 that allows Federal and State agencies to coordinate activities for implementing the plan. East of the SJR, the valley is underlain by older sediments. The shallow groundwater quality is generally very good in this portion of the valley.

In the areas west of the SJR, unconfined groundwater generally flows from the southwest toward the northeast, although groundwater pumping and irrigation complicates and changes local flow directions with time. Aquifer response to pumping and irrigation is relatively rapid, resulting in local changes in groundwater flow direction as associated temporary cones of depression and recharge mounds form and dissipate.

**Exchange Contractors** Generally, groundwater development in the Exchange Contractor's service area has not influenced shallow groundwater interaction with surface water bodies. The depth to shallow groundwater, less than 10 feet deep, has been monitored intensively since 1984. The Exchange Contractors report that no trend exists regarding a significant lowering of these groundwater levels during years of heavy pumping (C. White, pers. comm., 2004).

**Table 6 Groundwater balance in the Exchange Contractor's service area, overall groundwater balance, 1993-2002**

Year	Total Inflows (acre-feet)	Total Outflows (acre-feet)	Groundwater Pumping (acre-feet)	Change in Groundwater Storage (acre-feet)
1993	1,205,765	1,236,292	136,388	-30,527
1994*	941,575	1,151,158	225,750	-209,580
1995	1,234,440	1,190,328	102,796	44,112
1996	1,301,032	1,201,994	121,050	99,038
1997	1,153,560	1,195,461	126,047	-49,242
1998	1,339,253	1,243,397	37,686	111,198
1999	959,686	1,090,646	99,964	-86,992
2000	1,102,669	1,081,140	120,738	40,622
2001	1,084,402	1,074,070	134,212	6,105
2002	1,008,553	1,067,654	175,894	39,808
Average 1993–2002	1,133,094	1,153,214	128,053	-3,546

**Source:** Exchange Contractors 2003.

\* Critically dry year

The calculated change in groundwater storage, illustrated in Table 6, shows an average annual decrease of 3,546 af over the 10-year period, representing approximately 0.31 percent of the total average yearly inflow of over 1,000,000 af. It should be noted that the change in groundwater storage is not directly measured. It is calculated from the differences in groundwater elevations measured in a network of wells. Thus, the value must be considered an approximation. In this context, a difference of 0.31 percent is within the potential error in the calculation.

The long-term hydrographic record for the Exchange Contractors service area was reviewed by Schmidt (CCID 1997). Schmidt's review shows that groundwater is in balance or is rising. The projected agricultural demand for groundwater in the Exchange Contractors service area is static (S. Chedester, pers. comm., 1998a,b). Over 500 agricultural wells are located in the



service area, and little or no expansion of the existing groundwater production well field is projected.

The Exchange Contractors project an increased demand for municipal water supply wells over the next 20 years. Currently, the average annual groundwater production rate from municipal wells within the service area is 16,500 af. That figure is projected to double by the year 2020 (S. Chedester, pers. comm., 1998a,b).

*Central California Irrigation District* Central California Irrigation District is underlain by the Delta-Mendota Basin which has a usable capacity of 4,440,000 af and a safe yield of 503,000 af/y (CCID Water Conservation Plan 2005). The wells which are part of the Proposed Action have previously been pumped however the same wells cannot be pumped for three consecutive years under the program. See Table 3 for specific information related to CCID deep well pumping and deep well pumping in the surrounding area.

*Firebaugh Canal Water District* Firebaugh Canal Water District is not in a groundwater conjunctive use area. Groundwater in FCWD has generally not been pumped for direct irrigation use (without mixing), because of the high salinity (often exceeding about 3,000 mg/l of total dissolved solids) (Reclamation 2004). FCWD overlies a saline sink with very poor groundwater quality that can only be pumped and used if blended into large fresh water supplies. The wells which are part of the Proposed Action have previously been pumped from 2007 to 2009, however for 12 years prior the wells had not been used.

**San Luis Water District and Westlands Water District** Groundwater conditions of the San Luis Unit are typified by those of the Westside Sub-basin. This sub-basin consists mainly of lands in WWD and is located between the Coast Range foothills on the west and the SJR drainage and Fresno Slough on the east. Primary recharge to the aquifer system is from seepage of Coast Range streams along the west side of the sub-basin and deep percolation of surface irrigation. Flood basin deposits have caused near surface soils to drain poorly, thus restricting the downward movement of percolating water. This restricts drainage of irrigation water and results in the development of irrigation problem areas.

Groundwater levels in the Westside Sub-basin were generally at their lowest levels in the late 1960s, prior to importation of surface water. After the CVP began delivery to the San Luis Unit in 1967-68, water levels gradually increased to a maximum in about 1987-88, falling briefly during the 1976-77 drought. Water levels began dropping again during the 1987-92 drought. Through a series of wet years after the drought, 1998 water levels recovered nearly to 1987-88 levels. The fluctuations in water levels illustrate both the importance of CVP deliveries in sustaining groundwater levels and the continuing influence of local and CVP-wide hydrologic conditions on surface water availability and, hence, on groundwater conditions in those areas where groundwater is pumped.

Westlands Water District and SLWD both have approved groundwater management plans, an indication of the districts' involvement in management of their groundwater resources.

In addition to the CVP supply, groundwater is available to some of the lands within WWD. The safe yield of the aquifer underlying WWD is approximately 200,000 af of water. WWD supplies groundwater to some district farmers and owns some groundwater wells, with the

remaining wells privately owned by water users in WWD. Other water supply sources available to the district for purchase include floodwater diverted from the Mendota Pool in periods of high runoff (Reclamation 2007b).

**Subsidence** Subsidence occurs in the western SJV where land that had been used for grazing or dry farming was converted to irrigated agriculture with the use of groundwater. As a result of historic groundwater overdraft, land subsidence is widespread along the western and southern parts of the SJV. Subsidence in the SJV results from lowered groundwater elevations and the subsequent compaction of the deterrred soil interstitial spaces. Subsidence areas are primarily associated with areas that are underlain by the Corcoran Clay layer, where pressure changes due to groundwater pumping have resulted in compaction of sediments. Between 1920 and 1970, 5,200 square miles in the valley had subsided more than one foot. Land subsidence is a significant problem in the western SJV and in the San Joaquin River Basin. The largest of the three land subsidence areas in the SJV is the 2,600-square-mile Los Banos-Kettleman City area, which extends from Merced County to Kings County and lies within both the San Joaquin and Tulane basins. Groundwater production prior to completion of the California Aqueduct in 1967 caused land subsidence of one foot regionally and up to 29 feet locally. Importation of surface water supplies has greatly reduced the rate of groundwater pumping in these regions and, therefore, has nearly eliminated additional land subsidence except during years of water supply shortages.

Land subsidence and compaction in different zones have been measured in and adjacent to the Exchange Contractors service area since 1957. During this period, land subsidence has ranged from less than a foot under the SLCC to over five feet near the Mendota Pool. The Exchange Contractors continue the annual service area subsidence monitoring. In the years since 1970, the rate of subsidence has declined because surface water was imported to the areas. The Exchange Contractors are conducting annual subsidence monitoring as part of their AB 3030 Groundwater Management Plan (Exchange Contractors 1997). The Exchange Contractors are also continuously monitoring subsidence, water levels, and compaction at two extensometers located along CCID facilities in Fresno County. The sites are located near the Mendota Pool and at the intersection of Russell Avenue and the DMC.

Continuously Operating Reference Stations are being installed at the sites to continuously measure total subsidence. The Continuously Operating Reference Stations are global positioning stations that continuously measure both vertical and horizontal movement of land surface. The Scripps Institute will collect the data on a daily basis as part of a study to determine relative velocities of land surfaces in North America. Annual reports will be generated, supplied to the Exchange Contractors, and analyzed.

The Mendota Pool Group has subsidence data for the Mendota Pool area. Their data has shown that shallow wells typically do not affect subsidence. Their most current report shows that inelastic compaction in the Mendota Pool area for 2008 was 0.020 feet (San Joaquin River Exchange Contractors Water Authority et al. 2009).

### **3.1.2 Environmental Consequences**

#### **3.1.2.1 No Action**

Under the No Action Alternative Reclamation would not approve any of the proposed transfers. SLWD's, PWD's, DPWD's and WWD's current surface water supply deficit of 120,000 af (120,000 af need – 0 af CVP deliveries = 120,000 af), 94,000 af, 86,128 af and 770,500 af respectively would not be abated. San Luis Water District, PWD, DPWD and WWD would pump available groundwater or acquire other surface water as well as taking actions to strategically reduce water demand in the district through abandonment of crops or fallowing lands.

The Central California Irrigation District would retain their 20,500 af of Exchange Contactor CVP supplies, FCWD would retain their 5,000 af of Exchange Contactor CVP supplies, and no additional groundwater due to this project would be pumped.

#### **3.1.2.2 Proposed Action**

For the CCID action, the transfer of 20,500 af would offset a small portion of the total 2010-11 surface water supply deficit in WWD, PWD, DPWD and SLWD and allow the delivery of surface water during the period from April 2010 to December 2011. The water transfer would be a minor offset to the surface water delivery reductions in SLWD, DPWD, PWD and WWD; however individual growers would benefit.

Water supplies in CCID would continue to meet agricultural water demand despite the transfer. CCID would pump an equivalent amount to offset surface water deliveries. This transfer would be required to be in compliance with CCID's transfer policy and maintain the balance in the groundwater basin. The pumping for transfer equates to 15.7 percent of the 10-year average Exchange Contractor groundwater pumping of 128,053 af/y. The CCID groundwater pumping may be offset by a reduction in groundwater pumping in the Recipient Water Districts where groundwater overdraft is not under control.

The wells pumping under this action would also be pumping from 180 to 240 feet – a relatively shallow level.

The 20,500 af of low quality groundwater pumped into the CCID's distribution system is required to not increase the TDS in CCID's canals to more than 700 mg/L.

Under the Proposed Action CCID would have sufficient water supplies to meet their water demands. CVP and SWP facilities would not be impacted as the transferred water must be scheduled and approved by Reclamation and DWR. No natural streams or water courses would be affected since no additional pumping or diversion that would not have happened under the No Action Alternative would occur. There would be a minor positive impact to surface water resources and a slight negative impact to groundwater resources due to the Proposed Action.

For the FCWD action, transfer of 5,000 af would offset 0.6 and 3.4 percent of the 2010-11 surface water supply deficit in WWD and SLWD respectively and allow the delivery of surface water during the period of April 2010 to December 2011. The water transfer would be a minor offset to the surface water reductions in SLWD and WWD.

Water supplies in FCWD would continue to meet agricultural water demand despite the transfer. FCWD would pump an equivalent amount to offset surface water deliveries. This transfer would be required to be in compliance with FCWD's transfer policy and maintain the balance in the groundwater basin. The pumping for transfer equates to 3.9 percent of the 10-year average Exchange Contractor groundwater pumping. The FCWD groundwater pumping may be offset by a reduction in groundwater pumping in the recipient water districts where groundwater overdraft is not under control.

The wells pumping under the Proposed Action would be pumping from 180 to 240 feet – a relatively shallow level.

The following wells would pump:

- 8 cfs well estimated to pump up to 1,700 af
- 4 cfs well estimated to pump up to 1,100 af
- 5 cfs well estimated to pump up to 1,000 af
- 3 cfs well estimated to pump up to 900 af
- 5 cfs well estimated to pump up to 300 af (well # 5)

The total would not exceed the 5,000 af in a single year as described in the Proposed Action.

Due to the shallow zone from which the wells are pumping, the groundwater being intercepted is water that is normally replenished annually. There has been no overdraft experienced in this aquifer. Additionally, since the wells are pumping a relatively small quantity from an area of no other groundwater pumping and the pumping is being done from the shallow zone, subsidence is unlikely to occur. The Mendota Pool Group reports have shown that pumping from shallow aquifers does not cause subsidence.

The 5,000 af of low quality groundwater pumped into the FCWD's distribution system has been calculated to change the TDS in FCWD's Intake Canal by no more than 30 mg/L. This water quality impact is within the normal water quality fluctuation in the canal system due to Delta pumping tidal influences and other influences. Under the Proposed Action, FCWD would have sufficient water supplies to meet their water demands. Central Valley Project and SWP facilities would not be impacted, as the transferred water must be scheduled and approved by Reclamation and DWR. No natural streams or water courses would be affected since no additional pumping or diversion that would not have happened under the No Action Alternative would occur. There would be no impact to surface or groundwater water resources due to the Proposed Action.

## **3.2 Land Use**

### **3.2.1 Affected Environment**

#### **3.2.1.1 Firebaugh Canal Water District**

FCWD is a 22,000 acre California water district located within the Grassland Drainage Area boundary. Crops irrigated within district boundaries are as follows: cotton, alfalfa, asparagus, sugar beets, corn, cucumbers, wheat, barley, melons, onions, pasture, safflower, tomatoes, Sudan grass and assorted tree crops.

### **3.2.1.2 San Luis Water District**

SLWD is located on the western side of the SJV near the City of Los Banos, in both Merced and Fresno Counties. The southern section of the district located in Fresno County is primarily agricultural. The land is planted with either row crops, including cotton and melons, or permanent crops, including primarily almonds. In recent years, some parcels in this area of the district have not been farmed because they are of marginal quality or have high water costs or drainage problems. The district's current population is approximately 700, with most individuals residing in the community of Santa Nella, located in the extreme northern portion of the district.

Although water deliveries by the SLWD historically have been almost exclusively used for agricultural use, substantial development in and around the cities of Los Banos and Santa Nella have resulted in a shift of some water supplies to M&I use. The SLWD currently supplies approximately 800 af/y to approximately 1,300 homes and businesses. It is anticipated that the conversion from agricultural use to M&I use will occur mostly in northern section of the district, which is located in Merced County. Approximately 10,000 acres identified as potential development locations are currently in the planning stages within Merced County and the district. Much of the land targeted for M&I development is currently unused for irrigated agriculture.

### **3.2.1.3 Westlands Water District**

Westlands Water District covers almost 950 square miles of prime farmland between the California Coast Range and the trough of the SJV in western Fresno and Kings Counties. It averages 15 miles in width and stretches 70 miles in length from Mendota on the north to Kettleman City on the south. Interstate 5 is located near the district's western boundary. Nearly all land within the current WWD service area was at one time farmed using groundwater. The first deliveries of CVP water from the SLC to WWD began in 1968.

Currently WWD's district boundaries encompass 604,000-acre with an irrigable acreage of 567,800 acres. WWD provides water via gravity water service and pumping from the SLC, depending on the location. More than 60 different crops are grown commercially in WWD. The cropping patterns have changed over the years depending upon water availability, water quality, the agricultural economy and market factors. The acreage trend is toward planting of vegetable and permanent crops, while cotton and grain acreage have decreased.

The current population within the WWD is approximately 50,000. The major community entirely within WWD is Huron. Three Rocks and Five Points are smaller communities within WWD. The communities of Firebaugh, Mendota, Kerman, Tranquillity, San Joaquin, Lemoore, and Stratford lie just outside the district's eastern edge.

Central Valley Project water in the district is used for both agricultural and M&I uses. The majority of CVP supply is used in agriculture, and of the almost 800 water users in the district, approximately 600 are agricultural users and approximately 180 are M&I users. Unlike many other key growing areas of California, urbanization is not a direct threat to productivity. The district's M&I deliveries include cities and governmental agencies; however, none of this water is treated by the district before its distribution. Current M&I deliveries are estimated to be approximately 2,000 af/y and account for only a very small percentage of the district's CVP supplies.

Westlands Water District permanent distribution system consists of 1,034 miles of closed, buried pipeline that conveys CVP water from the San Luis and Coalinga Canals and 7.4 miles of unlined canal that conveys CVP water from the Mendota Pool. The area served by the system encompasses approximately 88 percent of the irrigable land in the district, including all land lying east of the SLC.

Of the gross 613,100 acres in WWD, approximately 570,000 acres are classified as irrigable. Water is delivered throughout WWD via 1,034 miles of underground pipelines, virtually eliminating seepage and evaporation losses in the distribution system. All water is metered at the point of delivery through more than 3,200 agricultural and 250 M&I meter locations. Westlands Water District contains three water service areas; these areas, referred to as priority areas, receive varying amounts of available water supply.

### **3.2.2 Environmental Consequences**

#### ***3.2.2.1 No Action***

Under the No Action Alternative crop failure is highly probable. With insufficient water to continue with current agricultural practices, row crops would likely be abandoned and additional ground fallowed. Water would most likely be diverted to permanent crops. Insufficient water supplies currently exist to support the permanent crops currently planted in these districts.

#### ***3.2.2.2 Proposed Action***

For the proposed action involving CCID, 20,500 af of additional water delivered to the Transfer Recipient District would offset a small portion of the surface water delivery deficit and allow water supplies to be delivered to Recipient Districts during April 2010 through December 2010 and from April 2011 through December 2011. Land fallowing is still expected due to the severity of the water shortage, however the infusion of 20,500 af of additional water supplies would preserve some vineyards or orchards that might otherwise have been abandoned.

There would be no land use changes in CCID as their water supply quantity is not changing.

There would be a slight positive impact on land use in the Transfer Recipient Districts due to the ability of some established row crops to remain in production and the enhanced survival of orchards.

For the proposed action involving FCWD, the 5,000 af of additional water delivered to SLWD and/or WWD would offset between 0.6 to 3.4 percent of the surface water delivery deficit and allow water supplies to be delivered to SLWD during the critical month allotment plan during June through September 2010. Land fallowing is still expected due to the severity of the water shortage, however the infusion of 5,000 af of additional water supplies would preserve some vineyards or orchards that might otherwise have been abandoned.

There would be no land use changes in FCWD as their water supply is not changing.

There would be a slight positive impact on land use in SLWD and/or WWD due to the ability of some established row crops to remain in production and the enhanced survival of orchards.

### 3.3 Biological Resources

#### 3.3.1 Affected Environment

The following list was obtained on January 26, 2010, (document number 100126042909) by accessing the U.S. Fish and Wildlife (FWS) Database:

[http://www.fws.gov/pacific/sacramento/es/spp\\_lists/auto\\_list.cfm](http://www.fws.gov/pacific/sacramento/es/spp_lists/auto_list.cfm). The list is for the Stratford, Westhaven, Kettleman City, Huron, Guajarral Hills, Avenal, La Cima, Coalinga, Burrel, Vanguard, Lemoore, Five Points, Westside, Harris Ranch, Califax, Tres Pecos Farms, Lillis Ranch, San Joaquin, Helm, Tranquillity, Coit Ranch, Levis, Cantua Creek, Chaney Ranch, Chounet Ranch, Monocline Ridge, Firebaugh, Oxalis, Dos Palos, Hammonds Ranch, Broadview Farms, Charleston School, Ortigalita Peak, Laguna Seca Ranch, Los Banos Valley, Volta, Los Banos, Tracy, Vernalis, Solyo, Patterson, Howard Ranch, Westley, Delta Ranch, Poso Farm, Mendota Dam, Crows Landing, Newman, Gustine, Hatch, Ingomar, Santa Rita Bridge and San Luis Dam quadrangles. The database was last updated on December 1, 2009. Please see Table 7 below.

**Table 7 Federal status species potentially found in the Proposed Action area**

<u>Common Name</u>	<u>Species Name</u>	<u>Federal Status under the ESA</u>	<u>Determination of Effect under ESA</u>	<u>Summary basis for ESA determination</u>
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
California condor	<i>Gymnogyps californianus</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
California jewelflower	<i>Caulanthus californicus</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
California red-legged frog	<i>Rana aurora draytonii</i>	T	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
California red-legged frog critical habitat		Proposed CH	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
California tiger salamander	<i>Ambystoma californiense</i>	T	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
California tiger salamander critical habitat		CH	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Central Valley spring-run chinook salmon	<i>Oncorhynchus tshawytscha</i>	T	NE	No effect on natural stream systems.
Central Valley steelhead	<i>Oncorhynchus mykiss</i>	T	NE	No effect on natural stream systems.

Central Valley steelhead critical habitat		CH	NE	No effect on natural stream systems.
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Conservancy fairy shrimp critical habitat		CH	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Delta smelt	<i>Hypomesus transpacificus</i>	T	NE	No downstream effects from action.
Delta smelt critical habitat		CH	NE	No downstream effects from action.
Fresno kangaroo rat	<i>Dipodomys nitratoide exillis</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Fresno kangaroo rat critical habitat		CH	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Giant garter snake	<i>Thamnophis gigas</i>	T	NE	No land use changes would occur as a result of this action, no adverse water quality changes at Mendota Pool; no conversion of habitat, and no new facilities.
Giant kangaroo rat	<i>Dipodomys ingens</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Green sturgeon, North American DPS	<i>Hypomesus transpacificus</i>	T	NE	No downstream effects from action.
Large-flowered fiddleneck	<i>Amsinckia grandiflora</i>	E	NE	Does not occur in area of effect.
Least Bell's Vireo	<i>Vireo bellii pusillus</i>	E	NE	Might fly over but would not stop in area of effect.
Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	E	NE	Does not occur in area of effect.
Longhorn fairy shrimp critical habitat		CH	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Palmate-bracted bird's beak	<i>Cordylanthus palmatus</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	E	NE	Does not occur in area of effect.
Riparian woodrat	<i>Neotoma fuscipes riparia</i>	E	NE	Does not occur in area of effect.
Sacramento River winter-run chinook salmon	<i>Oncorhynchus tshawytscha</i>	T	NE	No effect on natural stream systems.
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.



San Joaquin woolly-threads	<i>Monolopia congdonii</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Tipton kangaroo rat	<i>Dipodomys nitratooides nitratooides</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Vernal pool fairy shrimp critical habitat		CH	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Vernal pool tadpole shrimp critical habitat		CH	NE	No land use changes would occur as a result of this action, no conversion of habitat, and no new facilities.
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	C	NE	Might fly over but would not stop in area of effect.

### 3.3.2 Environmental Consequences

The action area consists of agricultural fields that provide some habitat values for a few species listed above, particularly the San Joaquin kit fox. However there is routine disturbance due to on-going farming practices, and so even the San Joaquin kit fox would have very limited use of the area and would generally not be able to den there.

The giant garter snake can potentially be affected by low water quality, and in this portion of its range, the species is threatened with extirpation. Its status has been detailed in the recent biological opinion issued by the USFWS for the third use agreement for the Grassland Bypass Project (USFWS 2010). The biological opinion also explains the risks that elevated selenium pose for the giant garter snake. Water that the snakes are exposed to should not exceed 2 ppb selenium, in order to avoid selenium toxicosis. Water quality for the giant garter snake would be of issue for water pumped into Mendota Pool, and for water that would be pumped into any canal that also serves as a water supply channel for Grasslands wetlands. The Main Canal conveys wetlands water supplies. The monthly average TDS in southern Mendota Pool normally ranges from slightly less than 350 mg/L TDS to slightly less than 570 mg/L TDS. Central California Irrigation District would not increase the receiving water's salinity above 700 mg/L TDS, and FCWD would not increase the level above 30 mg/L.

The giant garter snake, because of extensive losses of suitable natural wetlands, now relies on rice fields in parts of its range. Some rice is grown in portions of some of the districts involved in these proposed actions.

#### **3.3.2.1 No Action**

Under the No Action Alternative, there would be no impacts to biological resources since conditions would remain the same as existing conditions.

#### **3.3.2.2 Proposed Action**

Most of the habitat types required by species protected by the ESA do not occur in the project area. The Proposed Action would not involve the conversion of any land fallowed and untilled for three or more years. The Proposed Action also would not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the Migratory Bird Treaty Act (MBTA). Since no natural stream courses or additional surface water pumping would occur, there would be no effects on listed fish species. No critical habitat occurs within the area affected by the Proposed Action and so none of the primary constituent elements of any critical habitat would be affected.

Based on the two districts' commitments and the background salinity levels,

TDS would remain at or below 700 mg/L, which would be low enough to protect the giant garter snake both in Mendota Pool and in suitable habitat in the Grasslands wetlands. Requirements by CCID for non-detect levels of selenium, and the fact that FCWD will not approve any water transfer involving a substitution of groundwater that FCWD believes would interfere with their ability to meet water quality objectives imposed by the Central Valley Regional Water Quality Control Board would protect the giant garter snake from effects of elevated selenium. There would be no loss of acres of land planted with rice as a result of these proposed actions. Although they are transfers with regard to Reclamation's involvement, there would be groundwater substitution.

The short duration of the water availability, the requirement that no native lands be converted without consultation with the USFWS, and the stringent requirements for transfers under applicable laws would preclude any impacts to wildlife, whether Federally listed or not.

### **3.4 Cultural Resources**

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Those resources that are on or eligible for inclusion in the NRHP are referred to as historic properties. The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800.

### **3.4.1 Affected Environment**

The San Joaquin Valley is rich in historical and prehistoric cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18<sup>th</sup> Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the valley. The San Joaquin Valley supported extensive populations of Native Americans, principally the Northern Valley Yokuts, in the prehistoric period. Cultural studies in the San Joaquin Valley have been limited. The conversion of land and intensive farming practices over the last century may have disturbed many Native American cultural sites.

The DMC is a component of the CVP that is currently being evaluated for the National Register. The DMC, completed in 1951, carries water southeasterly from the Tracy Pumping Plant along the west side of the San Joaquin Valley for irrigation supply, for use in the San Luis Unit, and to replace San Joaquin River water stored at Friant Dam and used in the Friant-Kern and Madera systems. The Mendota Pool is a component of the DMC and is collection facility at the junction of the San Joaquin River and the North Fork of the King's River 30 miles west of Fresno.

The San Luis Canal is a component of the CVP that is currently being evaluated for the National Register. It is a joint Federal/State facility that consists of a concrete-lined canal that is the federally-built and operated section of the California Aqueduct. It extends 102.5 miles from the O'Neill Forebay, near Los Banos, in a southeasterly direction to a point west of Kettleman City.

### **3.4.2 Environmental Consequences**

#### **3.4.2.1 No Action**

The No Action Alternative would not alter the DMC, the Mendota Pool, nor the San Luis Canal and has no potential to affect historic properties pursuant to 36 CFR Part 800.3(a)(1).

#### **3.4.2.2 Proposed Action**

The Proposed Action is an administrative action that would allow for the flow of water through existing facilities to existing users. There is no ground disturbance or modification needed to the existing facilities as a result of this action nor would there be any changes in cropping patterns or urban development. As a result there is no potential to affect historic properties pursuant to 36 CFR Part 800.3(a)(1). There are no impacts to cultural resources as a result of implementing the Proposed Action.

## **3.5 Indian Trust Assets**

Indian trust assets (ITA) are legal interests in assets that are held in trust by the United States Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the interior is the trustee for the United States on behalf of federally recognized Indian tribes. "Assets" are anything owned that holds monetary value. "Legal interests" means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is

improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. ITA cannot be sold, leased or otherwise alienated without United States' approval. Trust assets may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITA may be located off trust land.

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain ITA reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

### **3.5.1 Affected Environment**

The nearest ITA is Santa Rosa Rancheria approximately 6 miles East of the project location. Therefore, the Proposed Actions would not affect ITAs.

### **3.5.2 Environmental Consequences**

#### **3.5.2.1 No Action**

Under the No Action Alternative there are no impacts to ITAs, since conditions would remain the same as existing conditions.

#### **3.5.2.2 Proposed Action**

There are no tribes possessing legal property interests held in trust by the United States in the water involved with this action, nor is there such a property interest in the lands designated to receive the water proposed in this action.

## **3.6 Environmental Justice**

Executive Order 12898 (February 11, 1994) mandates Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

### **3.6.1 Affected Environment**

The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America. The population of some small communities typically increases during late summer harvest.

Executive Order 12898, dated February 11, 1994, requires Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations. The population of some small communities typically increases during late summer harvest. The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America. Table 8 characterizes the area by county.

Table 8. Community Characteristics by County.

General Characteristics	Kings		Fresno		Merced		Stanislaus		San Joaquin		California	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
White		69.9		61.3		62.2		74.6		59.9		76.6
Black or African American		7.7		5.1		3.7		2.9		7.4		6.7
American Indian/Alaskan Native		1.3		1.1		1.1		0.9		0.9		1.2
Asian		3.5		8.7		6.8		5.0		13.8		12.5
Native Hawaiian/Pacific Islander		0.1		0.1		0.3		0.5		0.5		0.4
Some other race		14.5		20.0		22.7		12.5		12.8		
Two or more races		2.9		3.6		3.3		3.6		4.7		2.6
Hispanic/Latino (of any race)		48.5		48.2		54.2		38.9		36.4		36.6
Median household income	\$49,419		\$45,805		\$44,338		\$51,601		\$54,711		\$61,017	
Average household size	3.25		3.14		3.30		3.13		3.12		2.87	
Individuals below poverty level		17.8		21.2		21.0		14.1		15.3		13.3

Source: US Census Bureau 2010.

### 3.6.2 Environmental Consequences

#### 3.6.2.1 No Action

The No Action Alternative would result in harm to minority or disadvantaged populations within the vicinity of SLWD, DPWD, PWD and WWD. Lands would be temporarily or permanently taken out of agricultural production with resulting reduction in the need for farm labor.

#### 3.6.2.2 Proposed Action

The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease. The Proposed Action would not disproportionately impact economically disadvantaged or minority populations. Some amount of agricultural production that would not be sustained with the current water availability would continue with the resulting preservation of jobs. The unemployment rate in the vicinity of SLWD, DPWD, PWD and WWD suggests that any actions that maintain seasonal jobs should be considered beneficial. Employment opportunities for low-income wage earners and minority population groups

would be within historical conditions. Disadvantaged populations would not be subject to disproportionate impacts.

## **3.7 Socioeconomic Resources**

### **3.7.1 Affected Environment**

The agricultural industry significantly contributes to the overall economic stability of the SJV. The CVP allocations each year allow farmers to plan for the types of crops to grow and to secure loans to purchase supplies. Depending upon the variable hydrological and economical conditions, water transfers and exchanges could be prompted. The economical variances may include fluctuating agricultural prices, pest outbreaks, changing hydrologic conditions, increased fuel and power costs.

### **3.7.2 Environmental Consequences**

#### **3.7.2.1 No Action**

Under the No Action Alternative economic conditions in the vicinity of SLWD, DPWD, PWD and WWD would worsen. As agricultural land is taken out of production there would be a decreasing need for farm labor, and farm equipment and supplies. The economic impacts of reduced agricultural production would reverberate through the central SJV's economy at a time when it is already shaky.

#### **3.7.2.2 Proposed Action**

The Proposed Action would allow for continued water deliveries to SLWD, DPWD, PWD and WWD and would maintain the stability of the agricultural market and economical vitality for the SJV to some degree. The proposed transfer would not interfere with SWP or CVP priorities or operations.

The water service transactions are temporary actions and do not result in long-term increases in water supplies that would encourage urbanization or construction.

## **3.8 Air Quality**

Section 176 (C) of the Clean Air Act [CAA] (42 USC 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal Clean Air Act (42 USC 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements would, in fact conform to the applicable SIP before the action is taken.

### 3.8.1 Affected Environment

Despite years of improvements, the San Joaquin Valley air basin does not meet state and Federal health-based air-quality standards. To protect health, the Valley Air District is required by Federal law to adopt stringent control measures to reduce emissions.

On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all Federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain de minimis amounts thus requiring the Federal agency to make a determination of general conformity.

The following de minimis amounts for the region covering the Exchange Contractors, SLWD, WWD, DPWD and PWD are presented in Table 8. The Federal standard for PM<sub>2.5</sub> is 35 µg/m<sup>3</sup> (hourly geometric mean) and 15 µg/m<sup>3</sup> (annual geometric mean). The de minimis threshold is 100 tons/year.

**Table 8 General conformity de minimis thresholds**

Pollutant	Federal Status	De minimis (Tons Per Year)
VOC (as an ozone precursor)	Nonattainment serious 8-hour ozone	50
NO X (as an ozone precursor)	Nonattainment serious 8-hour ozone	50
PM 10	Attainment Maintenance	100
CO	Attainment Maintenance	100

Sources EPA 2010; 40 CFR 93.153

### 3.8.2 Environmental Consequences

#### 3.8.2.1 No Action

Under the No Action Alternative, there would be no impacts to air quality since conditions would remain the same as existing conditions.

#### 3.8.2.2 Proposed Action

Most of the wells that would be pumped have electric motors and the other two have the latest tier three diesel engines. These low emission engines would not reach the de minimis threshold and therefore a conformity analysis is not required under the Clean Air Act and there would be only a slight impact on air quality.

## 3.9 Global Climate Change

### 3.9.1 Affected Environment

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change [changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.] (EPA 2008a)

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG, such as carbon dioxide (CO<sub>2</sub>), occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHG that enter the atmosphere because of human activities are: CO<sub>2</sub>, methane (CH<sub>3</sub>), NO<sub>x</sub>, and fluorinated gasses (EPA 2008a).

During the past century humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily CO<sub>2</sub> and CH<sub>3</sub>, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. At present, there are uncertainties associated with the science of climate change (EPA 2008b).

More than 20 million Californians rely on the SWP and CVP. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations.

While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

### **3.9.2 Environmental Consequences**

#### ***3.9.2.1 No Action***

Under the No Action Alternative, there would be no additional impacts to global climate change.

#### ***3.9.2.2 Proposed Action***

Under the Proposed Action, minor amounts of GHGs would be released by the two pumps that have diesel engines. These two engines have low emissions and the contribution of GHGs would be small.

## **3.10 Cumulative Impacts**

Additional transfers to SLWD, DPWD, PWD and WWD are under development. Transfers in this dry year will not provide sufficient water to meet the full irrigation demand in these districts. Therefore there will be no adverse cumulative impact of additional transfers in or groundwater deliveries via Warren Act contract on land uses, biological resources, or socioeconomics. Since there was no impact to cultural resources or ITAs there is no cumulative impacts to these resources. The pump in project is under the de minimis standard for Federal agencies under the CAA so again there are no cumulative impacts to air quality.

The Exchange Contractors have committed to a policy of no net depletion of groundwater over the next ten years. Based on a review of groundwater levels over the past ten years, no net substantial change in groundwater storage has occurred within the Exchange Contractors service area. The average annual volume of groundwater pumped over the period from 1993



to 2002 was approximately 130,000 af/y. As discussed in the previous section on water balance, it appears that a pumping rate of 130,000 af/y can be sustained without creating an overdraft condition in the Exchange Contractors service area. The Exchange Contractors propose no more than 20,000 af/y of transfer water to be developed from groundwater in a normal year (Reclamation 2004). Under current practices, approximately 6,000 af/y of transfer water is developed through groundwater pumping (D. Steiner, pers. comm., 2004). Given the small amount of the increase, the groundwater pumping component of the proposed transfer would likely have little or no direct effect on groundwater levels or flow patterns within the source area over the 25-year duration of the various Exchange Contractor programs. Furthermore, ongoing groundwater monitoring would detect any negative impacts that FCWD pumping may have on nearby wells or the depth to water. These impacts are prohibited under the FCWD's 1993 transfer policies. The cumulative impact of groundwater pumping is minimal.

Under a ten-year program, FCWD will free up the water via fallowing approximately 2,800 acres of land, transferring up to 7,000 af in each year to WWD, SLWD, Panoche Water District and Pacheco Water District.

Under the 25-year program, in 2010 and again in 2011, FCWD will pump 3,000 af from shallow wells located over 15 miles from the wells considered in the Proposed Action. There are no grower wells in the area proposed for the shallow pumping under the Proposed Action.

In another action currently proposed, Reclamation proposes to issue two-year Exchange Agreements or two-year Warren Act contracts to requesting CVP contractors within the Delta Division and San Luis Unit for the 2010 Contract Year and ending 2012. The term would be March 1, 2010 through February 28, 2011 for pumping and conveyance, and March 1, 2010 through February 29, 2012 for storage and conveyance only.

Each participating contractor would be allowed to pump up to 10,000 acre-feet (AF) of non-CVP water into the DMC, and not exceed the combined total of 50,000 AF for all contractors involved with the Proposed Action. Conveyance and storage of non-CVP water in CVP facilities would be subject to available capacity.

Table 9 is a list of the water districts that could potentially participate in this Proposed Action and the estimated pumping quantities.

**Table 9 Warren Act Contract/Exchange Agreement Quantities for Groundwater Pumping into DMC**

District	Quantity for 2010 (AF)
Byron Bethany Irrigation District	2,000
Banta Carbona Irrigation District	4,500
Del Puerto Water District	10,000
West Stanislaus Irrigation District	3,000
San Luis Water District	10,000
Panoche Water District	10,000
Pacheco Water District	5,000
Mercy Springs Water District	5,500
Total	50,000

The source of the non-CVP water would be district groundwater pumping. The districts would pump groundwater directly into the DMC. The amount of water pumped into the DMC

would be measured by SLDMWA field staff. Participating districts intend to pump up to 10,000 AF of groundwater into the DMC. However, the combined total would not exceed 50,000 AF. The district would then take out a like amount from turnouts on either the DMC or the SLC to be conveyed through their distribution systems for agricultural use to water users within the district.

Each district would be required to confirm that the proposed pumping of groundwater would be compatible with local groundwater management plans. Each district would be limited to pumping a quantity below the “safe yield” as established in their groundwater management plan, in order to prevent groundwater overdraft and avoid adverse impacts.

Water quality and monitoring requirements are established by Reclamation. These standards were established to protect water quality in federal facilities by ensuring that imported water does not impair existing uses or negatively impact existing water quality conditions. They would be adhered to.

The water would be used for irrigation purposes on established lands. There would be no new construction or excavation occurring as part of the Proposed Action. Pumping and conveyance would occur all within existing wells, meters, and pipes across DMC right-of-way.

No native or untilled land (fallow for three years or more) may be cultivated with CVP water involved with these actions. The proposed actions, when added to other actions, would not contribute to significant increases or decreases in environmental conditions. These water service actions would be temporary lasting only through December 2011. The Proposed Action was found to have no impact on water resources, biological resources, cultural resources, ITAs, and socioeconomics and therefore there is no contribution to cumulative impacts on these resources areas. Slight beneficial impacts to land use and environmental justice are within the historical variations and would not contribute to cumulative impacts. Overall there would be no cumulative impacts caused by the Proposed Action.

## **Section 4 Consultation and Coordination**

### **4.1 Fish and Wildlife Coordination Act (16 USC § 661 et seq.)**

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The Proposed Action does not involve federal water development projects. Therefore the FWCA does not apply.

### **4.2 Endangered Species Act (16 USC § 1531 et seq.)**

Section 7 of the ESA requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat

of these species. Since there would be no ground disturbance, no adverse water quality changes in giant garter snake habitat, and because water would move in existing facilities, there would be no effect on endangered species.

### **4.3 National Historic Preservation Act (16 USC § 470 et seq.)**

The NHPA of 1966, as amended, is the primary Federal legislation that outlines the Federal Government's responsibility to consider the effects of their actions on historic properties. The 36 CFR Part 800 regulations that implement Section 106 of the NHPA describe how Federal agencies address these effects. There is no ground disturbance or modification needed to the existing facilities and there are no changes in cropping patterns or urban development for this action. As a result there is no potential for this action to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1).

### **4.4 Indian Trust Assets**

ITA are legal interests in property held in trust by the United States for federally-recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITA can include land, minerals, federally-reserved hunting and fishing rights, federally-reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally-recognized Indian tribes with trust land; the United States is the trustee. By definition, ITA cannot be sold, leased, or otherwise encumbered without approval of the United States. The characterization and application of the United States trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historic treaty provisions.

### **4.5 Migratory Bird Treaty Act (16 USC § 703 et seq.)**

The MBTA implements various treaties and conventions between the U.S. and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the MBTA, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg would be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would not affect birds protected under the MBTA.

## **4.6 Executive Order 11988 – Floodplain Management and Executive Order 11990-Protection of Wetlands**

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains. Executive Order 11990 places similar requirements for actions in wetlands. The Proposed Action would not affect either concern.

## **4.7 Clean Air Act (42 USC § 7506(C))**

Section 176 (c) of the Clean Air Act [42 U.S.C. 7506 (c)] requires any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal Clean Air Act (42 U.S.C. 7401 (a)) before the action is otherwise approved. In this context, conformity means that such Federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each Federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, USEPA promulgated final general conformity regulations at 40 CFR 93 Subpart B for all Federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain de minimis amounts thus requiring the Federal agency to make a determination of general conformity.

Most of the wells that would be pumped have electric motors and the other two have the latest tier three diesel engines. These low emission engines would not reach the de minimis threshold and therefore a conformity analysis is not required under the Clean Air Act and there would be a slight impact on air quality.

## **4.8 Clean Water Act (16 USC § 703 et seq.)**

### **Section 401**

Section 401 of the Clean Water Act (CWA) (33 USC § 1311) prohibits the discharge of any pollutants into navigable waters, except as allowed by permit issued under sections 402 and 404 of the CWA (33 USC § 1342 and 1344). If new structures (e.g., treatment plants) are proposed, that would discharge effluent into navigable waters, relevant permits under the CWA would be required for the project applicant(s). Section 401 requires any applicant for an individual Corps dredge and fill discharge permit to first obtain certification from the state that the activity associated with dredging or filling will comply with applicable state effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling.

No dredged or fill material would be discharged into any waters of the U.S. under the Proposed Action so no water quality certifications under Section 401 of the CWA are required.

#### **Section 404**

Section 404 of the CWA authorizes the Corps to issue permits to regulate the discharge of “dredged or fill materials into waters of the United States” (33 USC § 1344). No activities such as dredging or filling of wetlands or surface waters would be required for implementation of the Proposed Action, therefore permits obtained in compliance with CWA section 404 are not required.

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Patricia Rivera – Indian Affairs Officer

Tony Overly – Archeologist

Michael Kinsey – Supervisory Wildlife Biologist and Acting Supervisory Natural Resource Specialist (Reviewer)

Michael Inthavong – Natural Resource Specialist (Reviewer)

Rain Healer – Natural Resource Specialist (Reviewer)

Rena Ballew – Contract Repayment Specialist (Reviewer)

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